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Certifications

WBENC: 237019

HUB:

1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

LELAP-02002

NELAP Certifications

Lubbock:

T104704219-08-TX

El Paso:

T104704221-08-TX

Midland: T104704392-08-TX

LELAP-02003 Kansas E-10317

Analytical and Quality Control Report

Brad Davis Zia Engineering & Environmental 755 S. Telshor Blvd. Suite F-201 Las Cruces, NM, 88011

Report Date: April 16, 2009

Work Order:

9032619

Project Name: HELSTF Long-Term Supplemental List Groundwater

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Time	Date
\mathbf{Sample}	Description	Matrix	Taken	Taken	Received
191322	HLSF-0148-DRW-009-0309	water	2009-02-24	10:06	2009-03-24

Comment(s)

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 8 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Notes:

For inorganic analyses, the term MQL should actually read PQL.

Standard Flags

- ${f U}\,$ Not detected. The analyte is not detected above the SDL.
- ${f J}$ Estimated. The analyte is positively identified and the value is approximated between the SDL and MQL.
- B The sample contains less than ten times the concentration found in the method blank.
- ${f JB}$ The analyte is positively identified and the value is approximated between the SDL and MQL.
 - The sample contains less than ten times the concentration found in the method blank.

The result should be considered non-detect to the SDL.

Michael Abril

Case Narrative

Samples for project HELSTF Long-Term Supplemental List Groundwater were received by TraceAnalysis, Inc. on 2009-03-24 and assigned to work order 9032619. Samples for work order 9032619 were received intact at a temperature of 8.0 deg. C.

Samples were analyzed for the following tests using their respective methods.

		Prep	Prep	QC	${ m Analysis}$
Test	Method	Batch	Date	Batch	Date
Chromium, Hexavalent	SM 3500-Cr B	49567	2009-03-25 at 09:50	58034	2009-03-25 at 09:50
Cr, Dissolved	S 6010B	49600	2009-03-30 at 09:59	58118	2009-03-31 at $10:12$
Cr, Total	S 6010B	49638	2009-03-31 at $09:51$	58149	2009-04-01 at $10:44$

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9032619 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: April 16, 2009 Work Order: 9032619 Page Number: 4 of 8

HELSTF Long-Term Supplemental List Groundwater

Analytical Report

Sample: 191322 - HLSF-0148-DRW-009-0309

Laboratory: El Paso

Analysis: Chromium, Hexavalent Analytical Method: SM 3500-Cr B Prep Method: N/AQC Batch: Analyzed By: 58034 Date Analyzed: 2009-03-25 MDPrep Batch: Prepared By: MD

49567 Sample Preparation: 2009-03-25

SDLMQLMethod Based Based Blank

MQLMDL SDL Parameter Result Result Result Units Dilution (Unadjusted) (Unadjusted) Flag 0.00594Hexavalent Chromium 0.02400.0240< 0.00594mg/L0.005940.0125

Sample: 191322 - HLSF-0148-DRW-009-0309

Laboratory: Lubbock

Analysis: Cr. Dissolved Analytical Method: S 6010B Prep Method: S 3005A QC Batch: Date Analyzed: Analyzed By: 581182009-03-31 RRPrep Batch: 49600 Sample Preparation: 2009-03-30 Prepared By: KV

SDL MQLMethod Based Based Blank MQLMDLParameter Flag Result Result Result Units Dilution SDL(Unadjusted) (Unadjusted) Dissolved Chromium 0.1400.140< 0.000583 mg/L0.0005830.0010.000583

Sample: 191322 - HLSF-0148-DRW-009-0309

Laboratory: Lubbock

Analysis: Cr, Total Analytical Method: S 6010B Prep Method: S 3010A QC Batch: 58149 Date Analyzed: 2009-04-01 Analyzed By: RRPrep Batch: 49638 Sample Preparation: 2009-03-31 Prepared By: KV

SDLMQLMethod Based Based Blank MQLMDL SDLParameter Flag Result Result Result Units Dilution (Unadjusted) (Unadjusted) Total Chromium 1.98 1.98 < 0.000583 mg/L0.0005830.005 0.000583

Method Blank (1)

QC Batch: 58034 Date Analyzed: 2009-03-25 Analyzed By: Prep Batch: 49567 QC Preparation: Prepared By: 2009-03-25 MD

 $continued \dots$

Work Order: 9032619

Page Number: 5 of 8 HELSTF Long-Term Supplemental List Groundwater

method blank continued				
Parameter	Flag	Result	Units	$rac{ m Reporting}{ m Limits}$
				Reporting
Parameter	Flag	Result	Units	Limits
Hexavalent Chromium		< 0.0119	m mg/L	0.00594
Method Blank (1)				
QC Batch: 58118	Date Ar	nalyzed: 2009-03-31		Analyzed By: RR
Prep Batch: 49600		paration: 2009-03-30		Prepared By: KV
				Reporting
Parameter	Flag	Result	Units	Limits
Dissolved Chromium		< 0.000583	m mg/L	0.000583
Method Blank (1)				
QC Batch: 58149	Date Ar	nalyzed: 2009-04-01		Analyzed By: RR
Prep Batch: 49638		paration: 2009-03-31		Prepared By: KV
Parameter	Flag	Result	Units	$rac{ m Reporting}{ m Limits}$
Total Chromium		< 0.000583	m mg/L	0.000583

QC Batch:	58118	Date Analyzed:	2009-03-31	Analyzed By:	RR
Prep Batch:	49600	QC Preparation:	2009-03-30	Prepared By:	KV

	LCS			Spike	Matrix		$\mathrm{Rec}.$
Param	Result	Units	Dil.	${f Amount}$	Result	Rec .	Limit
Dissolved Chromium	0.103	$\mathrm{mg/L}$	1	0.100	< 0.000583	103	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	$_{ m LCSD}$			Spike	Matrix		Rec .		RPD
Param	Result	Units	Dil.	${ m Amount}$	Result	Rec .	Limit	RPD	Limit
Dissolved Chromium	0.104	$\mathrm{mg/L}$	1	0.100	< 0.000583	104	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

HELSTF Long-Term Supplemental List Groundwater

Laboratory Control Spike (LCS-1)

QC Batch: 58149 Date Analyzed: 2009-04-01 Analyzed By: RR
Prep Batch: 49638 QC Preparation: 2009-03-31 Prepared By: KV

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit Total Chromium 0.103 0.100 < 0.000583103 85 - 115 mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		$\mathrm{Rec}.$		RPD
Param	Result	Units	Dil.	A mount	Result	Rec.	Limit	RPD	Limit
Total Chromium	0.104	mg/L	1	0.100	< 0.000583	104	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 191321

QC Batch: 58034 Date Analyzed: 2009-03-25 Analyzed By: MD Prep Batch: 49567 QC Preparation: 2009-03-25 Prepared By: MD

	MS			Spike	Matrix		$\mathrm{Rec}.$
Param	Result	Units	Dil.	${f Amount}$	Result	$\mathrm{Rec.}$	Limit
Hexavalent Chromium	0.596	$_{ m mg/L}$	1.11	0.556	0.031	102	80.1 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		$\mathrm{Rec}.$		RPD
Param	Result	Units	Dil.	${f Amount}$	Result	Rec.	Limit	RPD	Limit
Hexavalent Chromium	0.600	mg/L	1.11	0.556	0.031	102	80.1 - 118	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 191096

QC Batch: 58118 Date Analyzed: 2009-03-31 Analyzed By: RR
Prep Batch: 49600 QC Preparation: 2009-03-30 Prepared By: KV

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	${ m Amount}$	Result	$\mathrm{Rec}.$	Limit
Dissolved Chromium	0.131	mg/L	1	0.100	0.045	86	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		$\mathrm{Rec}.$		RPD
Param	Result	Units	Dil.	${ m Amount}$	Result	Rec.	Limit	RPD	Limit
Dissolved Chromium	0.128	mg/L	1	0.100	0.045	83	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: April 16, 2009 Work Order: 9032619 Page Number: 7 of 8

HELSTF Long-Term Supplemental List Groundwater

Matrix Spike (MS-1) Spiked Sample: 191156

QC Batch: 58149 Date Analyzed: 2009-04-01 Analyzed By: RR
Prep Batch: 49638 QC Preparation: 2009-03-31 Prepared By: KV

MSSpike Matrix Rec. Param Result Units Dil. AmountResult Rec. Limit Total Chromium 0.126 0.100 0.023103 75 - 125 mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		$\mathrm{Rec}.$		RPD
Param	Result	Units	Dil.	${ m Amount}$	Result	Rec.	Limit	RPD	Limit
Total Chromium	0.131	mg/L	1	0.100	0.023	108	75 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (CCV-1)

QC Batch: 58034 Date Analyzed: 2009-03-25 Analyzed By: MD

			CCVs	CCVs	CCVs	Percent	
			True	Found	$\operatorname{Percent}$	Recovery	Date
Param	Flag	Units	Conc .	Conc .	Recovery	Limits	${\bf Analyzed}$
Hexavalent Chromium		mg/L	0.500	0.500	100	90 - 110	2009-03-25

Standard (CCV-2)

QC Batch: 58034 Date Analyzed: 2009-03-25 Analyzed By: MD

			CCVs	CCVs	CCVs	Percent	
			True	Found	$\operatorname{Percent}$	Recovery	Date
Param	Flag	Units	Conc .	Conc .	Recovery	Limits	${ m Analyzed}$
Hexavalent Chromium		${ m mg/L}$	0.500	0.508	102	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 58118 Date Analyzed: 2009-03-31 Analyzed By: RR

			CCVs	CCVs	CCVs	$\operatorname{Percent}$	
			True	Found	$\operatorname{Percent}$	Recovery	Date
Param	Flag	Units	Conc .	Conc .	Recovery	Limits	Analyzed
Dissolved Chromium		$_{ m mg/L}$	1.00	0.991	99	90 - 110	2009-03-31

Standard (CCV-1)

QC Batch: 58118 Date Analyzed: 2009-03-31 Analyzed By: RR

Report Date: April 16, 2009

Work Order: 9032619	Page Number: 8 of 8
HELSTF Long-Term Supplemental List Groundwater	

			${ m CCVs} \ { m True}$	CCVs Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	$\overline{\text{Analyzed}}$
Dissolved Chromium		$_{ m mg/L}$	1.00	1.01	101	90 - 110	2009-03-31

Standard (ICV-1)

QC Batch: 58149 Date Analyzed: 2009-04-01 Analyzed By: RR

			${ m CCVs} \ { m True}$	$\begin{array}{c} { m CCVs} \\ { m Found} \end{array}$	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	${ m Analyzed}$
Total Chromium		${ m mg/L}$	1.00	1.02	102	90 - 110	2009-04-01

Standard (CCV-1)

QC Batch: 58149 Date Analyzed: 2009-04-01 Analyzed By: RR

			CCVs	CCVs	CCVs	$\operatorname{Percent}$	
			True	Found	$\operatorname{Percent}$	Recovery	Date
Param	Flag	Units	Conc .	Conc .	Recovery	Limits	Analyzed
Total Chromium		$_{ m mg/L}$	1.00	1.01	101	90 - 110	2009-04-01

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Analyte List – HELSTF Long-term Groundwater Monitoring Supplemental Sampling List

CFW-01, CFW-02, CFW-03, CFW-04, DRW-06, DRW-08, DRW-09, DRW-10, DRW-11, HCF-02, HCF-03, HMW-07, HMW-12, HMW-14, HMW-26, HMW-28, HMW-31, HMW-53, DRW-14, DRW-15, DRW-17, HELSTF-01, HMW-16, HMW-42, HMW-54, HMW-55, HMW-61, HMW-62, HMW-63, HMW-64, HMW-65

	Parameter	Reference Method	Container	Container Maximum hold time			
Water Quality	Conductivity pH Temperature Dissolved Oxygen ORP Turbidity	Field measured with YSI and turbidimeter	NA	NA	NA		
Organics	VOCs	8260	40-mL VOAs (3)	14 days	HCI, pH<2 Chill to 4 °C		
	Total Chromium	6010	500-mL polyethylene	6 months	HNO ₃ , pH<2 Chill to 4 °C		
Total Metals	Hexavalent Chromium	SM 3500-Cr D	250-mL polyethylene	24 hours	Chill to 4 °C		
Dissolved Metals	Dissolved Chromium	6010	500-mL polyethylene	6 months	Field Filter HNO ₃ , pH<2 Chill to 4 °C		

Analyte List – HELSTF Long-term Groundwater Monitoring Supplemental Sampling List (LNAPL)

Product Sampling HCF-03 and HCF-07

	Parameter	Reference Method	Container	Maximum hold time	Preservative
LNAPL (product)	VOCs simulated distillation viscosity density specific gravity surface tension		500-mL polyethylene		